



Expert Facility Activity EFS-IL-1/WP1
**“Support stream rehabilitation, river restoration:
definition of ecological flows, definition of
regulation/ criteria to determine good chemical and
ecological status, and related methods”**

**GLOBAL REPORT - TASK 1: STREAM
REHABILITATION AND RESTORATION**

October 2018

Version	Document Title	Author	Review and Clearance
V2	Adopting a stream, evaluation training and action plan	Jasper Fiselier (Royal HaskoningDHV)	Suzan Taha, Key water expert (SWIM-H2020 SM)



THE SWIM AND H2020 SUPPORT MECHANISM PROJECT

(2016-2019)

The SWIM-H2020 SM is a Regional Technical Support Program that includes the following Partner Countries (PCs): Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, [Syria] and Tunisia. However, in order to ensure the coherence and effectiveness of Union financing or to foster regional co-operation, eligibility of specific actions will be extended to the Western Balkan countries (Albania, Bosnia Herzegovina and Montenegro), Turkey and Mauritania. The Program is funded by the European Neighborhood Instrument (ENI) South/Environment. It ensures the continuation of EU's regional support to ENP South countries in the fields of water management, marine pollution prevention and adds value to other important EU-funded regional programs in related fields, in particular the SWITCH-Med program, and the Clima South program, as well as to projects under the EU bilateral programming, where environment and water are identified as priority sectors for the EU co-operation. It complements and provides operational partnerships and links with the projects labelled by the Union for the Mediterranean, project preparation facilities in particular MESHIP phase II and with the next phase of the ENPI-SEIS project on environmental information systems, whereas its work plan will be coherent with, and supportive of, the Barcelona Convention and its Mediterranean Action Plan.

The overall objective of the Program is to contribute to reduced marine pollution and a more sustainable use of scarce water resources. The Technical Assistance services are grouped in 6 work packages: WP1. Expert facility, WP2. Peer-to-peer experience sharing and dialogue, WP3. Training activities, WP4. Communication and visibility, WP5. Capitalizing the lessons learnt, good practices and success stories and WP6. Support activities.



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1 BACKGROUND OF THE ACTIVITY

1.1 INTRODUCTION

Within the scope of work of the SWIM-H2020, the project provided technical assistance to support Israel in implementing one of the “Main Policy Points” of the Long Term – Master Plan for the National Water Sector under the “*Management of the Natural Water System*” which refers to “*rehabilitation and preservation of the resources as a national strategic asset and considers river/stream rehabilitation/restoration*” as a basic approach to long term management of natural water sources.

The activity, which falls under the Expert Facility (EF) Work Package 1 (WP1), is referred to in the EF work plan as Activity No. EFS-IL-1 and is titled “**Support stream rehabilitation, river restoration: definition of ecological flows, definition of regulation/ criteria to determine good chemical and ecological status, and related methods**”.

1.2 OBJECTIVES

The general objectives of this activity is to support the country in its enhancement of their management of the natural water system (rehabilitation and preservation of the resources) through ecosystem approaches in IWRM, thus contributing to the implementation of the “Main Policy Points of the Long Term master Plan for the National Water Sector.

It is axed around two objectives with the aim to:

- 1) Assist Israeli Ministry of Environment Protection (MoEP) in its plans to develop a community based program for "adoption of a stream" in order to help keep the stream clean and educate the public about the importance of viable streams. The program will include the following aspects: water quality, flora and ecology, environmental hydrology, agricultural and urban environment and social aspects of the community that lives nearby and will take into consideration the value of the rivers for open-air recreation.
- 2) Introduce methods and tools for monitoring nonpoint source pollution, and for determining good chemical status of water. Currently, efforts of restoring part of the original flows are implemented for example in the Jordan, Alexander and Yarkon rivers, by releasing into these rivers a mix of groundwater with tertiary treated water which has also undergone wetland treatment.

The activity is implemented in two distinct components

- Component A: linked to Stream rehabilitation and restoration
- Component B: linked to Non-Point sources pollution monitoring plan

The **specific objectives** of each component are as follows:

Component A: “Stream rehabilitation and restoration”



Support the MoEP in its plans to develop a community based program for "adoption of a stream" - to help keep the stream clean and educate the public about the dangers of nonpoint-source pollution; to encourage the local community to take part in the program. The program will include the following aspects: water quality, flora and ecology, environmental hydrology and tourism and recreation in open, agricultural and urban environments.

Component B “Non-Point sources pollution monitoring plan”

Build the capacities of relevant authorities (MoEP, drainage authorities and stream authorities, Ministry of Agriculture, Nature and Parks Authority etc.) in the development and implementation of plans for monitoring nonpoint-source pollutants in streams (using a pilot stream or section(s) of a stream as a case study), including the determination of indicators/thresholds and introduction to IT and other technologies such as the use of remote sensing, aerial photography, drones and others.

1.3 TARGET GROUP FOR THE ACTIVITY

The target group of this activity is the staff from the Ministry of Environmental Protection (MoEP). Other relevant stakeholders are the Ministries of Agriculture, Interior, National Infrastructures, as well as Authorities such as Drainage authorities, Stream authorities, local authorities, national nature and parks authority, the Society for the Protection of Nature.

The ultimate beneficiaries of this activity are the stream environment and the ecosystem, the community, farmers, tourism and recreation services.

Below are the target groups listed by task:

Component A

Drainage and stream authorities, local authorities, the Society for the Protection of Nature in Israel, CSOs/NGOs and the relevant ministries: MoEP, Ministry of Agriculture, Nature and Parks Authority.

Component B

Drainage and stream authorities, MoEP and Ministry of Agriculture, relevant Academic /Educational/ Research Institutions and CSOs / NGOs.

1.4 EXPECTED RESULTS

The following lists the expected results to be achieved (See box 1 below):

Expected Results

Component A: Stream rehabilitation and restoration

- Relevant Stakeholders are introduced to the streams' values and functions, the impact of non-point source pollution on the streams and the role that the communities can play in maintaining/rehabilitation; based on existing models for “adoption of a stream“ applied in different countries; preferably from South Europe.



- The long, medium and short term objectives of the “Adoption of a stream” program are identified jointly with the stakeholders.
- A model for the public involvement in preservation/rehabilitation/monitoring/development and maintenance of selected streams is recommended with an Action Plan for implementation.

Component B: Non-Point sources pollution monitoring plan

- A training manual is prepared to be used as a reference for the development of plans for monitoring non-point source pollution including a case study for a selected stream (or section of a stream) from Israel.
- The capacity of the MoEP's and other stakeholders is strengthened with regards to the development of plans for monitoring non-point source pollution (using also a selected stream or section(s) of a stream in Israel as a case study) and the related regulations and enforcement tools.
- A set of Indicators for monitoring non-point source pollutants, together with the required parameters, thresholds and data for measuring the indicators are set
- Demonstration - Monitoring plan for one pilot stream including working procedures for monitoring non-point source pollution based on a proposed methodology and set of indicators.

1.5 TASKS AND DELIVERABLES

In accordance with the Terms of Reference, this intervention is divided into two (2) tasks according to the brief description of the tasks and corresponding deliverable

Task	Deliverables
Component A: Stream rehabilitation and restoration	
Task 1: Organization of a seminar on different models for adoption of a stream, and methodologies employed for its study/ monitoring including GIS & IT aspects	
Task 1a: Preparation and conduct of a 2 day workshop/seminar	<ol style="list-style-type: none"> 1. Summary document of the European experience in adoption of a stream 2. two to four pages seminar/workshop background information note including agenda 3. Pre-training and post training assessment questionnaires 4. Training Workshop report (including outcomes, list of participants and , workshop evaluation) according to SWIM-H2020 requirements
Task 1b: Prepare a short, medium and long term Action Plan for the “Adoption of a stream” program based on the workshop results	Action Plan
Non-Point sources pollution monitoring plan	
Task 2: Capacity building in developing a monitoring plan using also a case study from a selected stream or section of a stream in Israel.	



Task 2a: Preparation of a Training Manual	A Training Manual ¹ to be used as a reference for the development and implementation of plans for monitoring non-point source pollution including a case study for a selected stream (or section of a stream) from Israel.
Task 2b: Preparation of a case study for the development of a monitoring plan, using a pilot stream	
Task 2c: Three-day Introductory Workshop/on-site training (class room & field visit)	Background information note including agenda - Presentations - Pre-training and post training assessment questionnaires - On-site training - Workshop report (including outcomes) according to SWIM-H2020 requirements
Task 2d.: Demonstration: Develop the Plan for monitoring non-point source pollutants in the selected stream and prepare related-work procedures	Plan for monitoring the non-point source pollutants in the selected stream and related-work procedures

It should be noted that this report corresponds to the global report on task 1

2 METHODOLOGY:

The general objective of the workshop is to support the MoEP in its plans to develop a community based program for "adoption of a stream".

A 2-day information seminar (training workshop) was organised between 16 and 17 January 2018 (See Section 7.1 for the Agenda), focusing on stream functions and values and especially on examples of stakeholder involvement in other countries (such as adopting a Stream) and its importance, with the aim to involve stakeholders in stream restoration, such as in monitoring, clean-up and also in reducing diffuse pollution

The **specific objectives of the seminar** was to:

1. Introduce the relevant stakeholders to the streams' values and functions, the impact of non-point source pollution on the streams.
2. Demonstrate examples of the role that the communities can play in maintaining / rehabilitation; based on existing models for "adoption of a stream" applied in different countries; preferably from South Europe.
3. Identify jointly with the stakeholders the long, medium and short term objectives of the "Adoption of a stream" program.
4. Agree with the stakeholders on the extent to which relevant actions will be covered in the short, medium and long terms in order to attain healthy/sound environmental status,
5. Select the appropriate model for the public involvement in preservation/rehabilitation/monitoring/development and maintenance of selected streams
6. Recommend an Action Plan for implementation.

¹ This should be used as a reference for the development of plans for monitoring non-point source pollution in other streams in the country (using the selected stream (or section of a stream) as a case study).



The presentations (Refer to www.swim-h2020.eu) introduced the participants to the following:

- Functions and values of streams.
- Ecological functions and values (what are the critical conditions and processes, differences between perennial and intermittent streams)
- Ecosystem services and values of streams
- Human interventions and their impact (impact of hydrological, morphological interventions and of point and non-point source pollution).
- Examples on stream restoration from Israel.

The group discussions involving examples of stakeholder involvement in a limited number of River authorities together with the presentations made on the “Potential Role of Stakeholders in the Monitoring, Management and Restoration of Streams” (Section 3) and on the “Experiences with Stakeholder Participation in Stream Management in Europe” (Section 4) informed and inspired the participating stakeholders and authorities with examples of adopting a stream, in order to give input to a discussion how stakeholder involvement may be initiated locally.

Due to time constraints, the discussions for the identification of the long, medium and short term objectives of the “Adoption of a stream” program focused on general objectives. There was a wide agreement that much can be achieved by involving volunteers, but there was discussion regarding the various activities that can be performed by stakeholder groups.

The discussion on the appropriate model for the public involvement in preservation/rehabilitation/monitoring/ development and maintenance of selected streams, did not lead to one model. There are clearly tasks and responsibilities with the ministries but also the individual drainage and river authorities can play a crucial role, and some, the larger ones already engage in stakeholder involvement. Much depends also on available budgets.

The action plan proposed by the participants during the seminar cited some actions for the short term (See Section 5), but did not comprise a programmatic approach for introducing “Adopting a Stream” to Israel as a coordinated effort. For this the time for discussion was too short and not all relevant key players were at the table.

See also workshop report on www.swim-h2020.eu

In view of the above, a list of actions for the initiation of an “Adoption of a stream” programme were developed by the non-key expert (See Section 6) with a view to the outcomes of the workshop, and against the background of existing river restoration initiatives in Israel and the main challenges that the country faces in involving stakeholders in such initiatives, which surfaced during the discussions



3 THE POTENTIAL ROLE OF STAKEHOLDERS IN THE MONITORING AND RESTORATION OF STREAMS

Rivers and streams form part of our history, culture and living environment. People that grew up at its borders often have fond memories from times that one could swim in clean water, observe fishes in the shallows or simply lie in the shade of massive riparian trees. Unfortunately these times have often come to an end. Many rivers and streams have become polluted, restricted by urban encroachments and have often lost riparian vegetation to dikes and hard revetments. Also in Israel this has become the fate of many streams. Since fresh water is scarce and irrigated agriculture became important many streams have become a trickle and perennial streams have become intermittent.

The times are however changing and reducing pollution, revitalizing flows and restoring lost stream morphology has become an important task of river management authorities. However, funds are often slim and the capacity of formal works forces is often too limited to perform all the activities needed to bring about a swift restoration or just to keep rivers free of floating debris.

Riparian residents have a keen interest in restoring their rivers and streams, to a state they used to know and appreciate. They are also keen observers that note changes over longer periods, but also incidents of shorter duration. They also seek opportunities to engage in community based and meaningful activities. And there are also stakeholders that take an interest in stream restoration, such as riparian municipalities and also local business, because they engage in water based activities or simply because they see it as a logical and moral responsibility.

So there are potentially many stakeholders and people, often with useful skills, that can organize, plan, monitor and help in the monitoring, management and restoration of streams and rivers. However, only a few of them would initiate their involvement themselves, but a larger group will join once an initiative is taken.

Today, there are many countries in which stakeholders and the public are involved in stream management, monitoring and restoration. Their involvement is organized in what can be defined with a general term of **Adopting a Stream**. It is a general term, since on closer inspection one can see many different forms of involvement.

The simplest form of engagement is that of a regular clean up, taking away the trash, that somehow always seems to accumulate on the shores of rivers and streams. Clean-up is necessary, is labour intensive and it has immediate results and does not require much a priori knowledge or capacities. Schools children engage in clean-up as do adults. It can be done locally, as a local initiative.

There are however also more elaborate and also more formalized forms of stakeholder and public engagement. In some countries involving stakeholders is highly organized with involvement of national, regional and local authorities. It often involves legally binding contracts between a water board or a province and a local volunteer group, for periods up to 5 years. Tasks are defined and costs are handled on the basis of an accepted local level plan.



The volunteer tasks can include, beside clean up, that often features in this plans, also monitoring and small scale restoration efforts, training and technical support. The basis is that the tasks are performed on a **voluntary basis**. In the more formalized forms, the plan of a volunteer organization needs to fit in formal water management and restoration plans. Sometimes, there are no formal plans to which to adhere, and volunteer groups can propose what they deem necessary and useful.

In EU-countries there are also many initiatives that involve also voluntary measures on riparian lands, often in the form of contracts with farmers. Farmers can propose measures that will reduce the pollution loads to streams, for restoring riparian forests or for opening up their land also for a footpath along the river.

The focus of stakeholder involvement may therefore differ. Interest groups, such as an angler organisation, may focus on the stream itself, sometimes extending their interest also to the riparian vegetation. There are also examples of provinces that aim for river restoration within a wider ambition of regional sustainable development. Bottom-up involvement of stakeholders is seen as instrumental in initiating local initiatives which are seen as the main drivers for rural development.

So the initiative can be taken on the national level, by a water board or by a local community or by interest groups or NGO's. All may have slightly different objectives, but the general ambition is clean waters and healthy streams.

An important form of voluntary activity is monitoring. It can involve water quality monitoring on selected adopted monitoring points by local residents. There are examples of residents that adopt for example sewer outfalls for doing periodical monitoring. It is also possible to engage in biological monitoring often with the help of expert advice in the form of training, or in the form of a handsome app that facilitates determination.

Often monitoring is coordinated so it can be complementary to what is done by a water management authority. There are apps that are easy to use and which make it possible to send georeferenced observations and directly to a database. This database can be handled by an authority but monitoring data are often made available to the public. The contribution of volunteers can be essential in monitoring and identifying the need for measures.

There is a natural balance between the tasks and responsibilities of a water management organization and what activities a volunteer group can engage in. And there is a balance between voluntary activities and obligatory activities that are needed in order to reduce pollution, such as Best Agricultural Practices and more. The balance between formal and voluntary tasks and between voluntary and obligatory activities differs from country to country.

The workshop will touch upon many themes, such as ecology and values of streams, but the main focus is on different forms of Adopting a Stream programmes. How are stakeholder participation organized, what activities are conducted by volunteers, how are voluntary activities facilitated and more. But also why stakeholder may be interested and also how to keep them involved. Based upon these examples we will explore the possibilities for stakeholder involvement in stream restoration Israel. There is already an example of a volunteer group that works on the Alexander river, NANA, which gives a local example of how it can be done.

The focus of stakeholder involvement can be all the activities described above, such as clean up, monitoring, small scale restoration measures, reducing emissions and more. A match need to be made between what is needed and not yet done for example by formal authorities and the interests and the



capabilities of stakeholders. It is also important to identify how stakeholder involvement can be facilitated in a way that its full potential can be used.

It is important to note that it is not only about initiating stakeholder involvement, but also about keeping them involved over longer time periods. This requires dedicated and continuous efforts.

The workshop is a 2 day event. In the first day emphasis is upon the ecological functioning and values of streams and the impact of human intervention. In the first day we also discuss examples of Adopting a stream kind of activities in different countries, notably from southern Europe. The second day will focus upon the possible objectives for stakeholder involvement in Israel and how this involvement can be initiated and organized

4 EXPERIENCES WITH STAKEHOLDER PARTICIPATION IN STREAM MANAGEMENT IN EUROPE

Stakeholder participation in stream management has been an ongoing activity in several European countries notably France, UK and the Netherlands. The emphasis has initially been on public consultation as part of the planning process. With the enactment of the EU-Water Frame Work (EU-WFD) directive, public consultation became main stream since it was a requirement. Since then European countries have created different ways to consult and involve stakeholders. The forms chosen vary from formal consultation on pre-defined plans prepared by experts and the water authority, to active joint fact finding and setting of objectives.

The involvement of stakeholders in the active water management of schemes has also been ongoing for decades in France, Spain and also in Germany as well as the Netherlands. There are however very different forms and objectives. **In the Netherlands**, riparian famers have had formal obligations for maintaining ditches for centuries, but their involvement in environmental management is more recent. In some countries, such as **Spain**, active NGO's started adopting river programmes focusing on safeguarding critical streams for their primary interest, often sport fishing.

Due to the influence of the WFD and related environmental directives, the involvement of stakeholders in planning and in the active management of rivers and streams has been increasing. Of the south European countries, France, Spain and Italy are examples where stakeholders' involvement is coordinated and supported in a programmatic way, covering more and more areas.

In most cases, **the involvement of stakeholders has been formalized**, in the sense that their activities are **bound by contracts and framed by official water management plans**. This is the case in the countries mentioned above, although there are also exceptions of a less formal character. These include initiatives of NGO's but also less formal and fixed approaches such as that of the Bach-paten Schaften² in

2 Creek stewardship



Rheinland-Pfalz³. AKtion Blau⁴ that incorporates the concept of Bach-paten has been very active for decades, involving many different kinds of stakeholders up to the level of small citizens' groups.

Also the **level of integration and division** in voluntary, compulsory and official activities differs. One may state that the voluntary activities are increasing, notably **cleaning-up, monitoring and small scale restoration measures** but that activities directed at limiting pollution become more compulsory in nature. This is due to the EU-directives, not only the WFD but also the nitrate directive. In many countries, buffer zones that limit emission to surface water are compulsory, as are measures that reduce the run-off of fertilizers, such as limitations regarding the period, form and amount of fertilization and contour ploughing.

An important characteristic of nearly all "adopting a stream" variants is that it is voluntary. Nevertheless, it can be organized in very different ways. Some are programmatic or more opportunistic in nature, some are an extension of formal water management plans, others leave room to local initiatives, some are facilitated by web-based platform, applied research, interactive databases, provision of dedicated apps for monitoring and others are still old school, announcing a clean-up in a local newspaper.

The forms that have been initiated by national and regional authorities usually make use of internet and social media, in order to coordinate, communicate and inform stakeholders.

The logic that drives these different organizational models depends on a mix of political ambitions, institutional context, legal empowerment and financial resources. In Italy, bottom-up stakeholder participation is a goal and not just a means, but a political ambition. Also the level of integration of not only the WFD but also the EU-directives, and the objectives of sustainable economic development surpass those of most other countries.

Other forms of organization are needed when aiming for integration beyond the mere borders of a stream and its riparian vegetation, since this will require a greater role for regional planning organizations in cooperation with regional water authorities.

Not all "adopting a stream" programs are successful, in the sense that they contribute substantially to the management and restoration of streams or form a continuous support over a longer period, which is desirable regarding stream management. The activities of the Spanish sport-fishing federation peaked in the early 90ies, with several parallel ongoing projects, but these activities are at a lower level during the recent years. Initiating stakeholders' support is far easier than maintaining it and keeping citizens involved. **Personal motivation** plays an important role, but also **recognition, facilitation** as well as **co-financing** are important in this respect.

Most formally organized initiatives work on the basis of 5 yearly contracts. A contractual basis is often deemed necessary since it **involves compensation of costs**, and arrangements for **insurance** needs. Many voluntary actions do not last for 5 years.

The initiatives in Italy, Spain and also France that are triggered by the WFD are fairly recent. They show increasing trends in the number of participants, but it is not yet clear how sustainable these activities will be in the long term. **There are however also positive examples of initiatives that have lasted longer than a generation, and that were able to continuously attract new young people. One of the best examples is Aktion Blau, which is already going strong for over 30 years.**

3 A state in Germany

4 See next page



Aktion Blau in **Germany** consists at the moment of over 700 Bach-Paten-Schaften that are active in monitoring and stream restoration measures along over 2700 km of streams. The groups involved are very diverse, with a large proportion of fishing clubs and nature societies, but also private individuals and political parties do partake. It is very bottom-up but well organized by the Ministry. It is also well-funded, based on the logic that voluntary contributions are very cost-efficient. **The reason why Aktion Blau is so successful over so many years may well be that stakeholders are free to define their own objectives.** It also contributes to up to 90% of the material costs. So far the programme has spent over 270 million Euros' in the past 23 years and invested in over 1300 restoration projects. The focus is however on the stream itself and its riparian vegetation.

France has also a long tradition that predates the enactment of the WFD. In the early 80ies, the first river contracts were drafted that involved the **participation of local municipalities**. These became the river and sub-catchment management plans, which were renewed with the introduction of the EU WFD and also combined with other EU directives. There are over 180 sub-catchment plans at the moment and the number is increasing, now covering over 25% of the country. **The primary focus is the protection and use of waters, with an emphasis also on flood protection and control.** Stakeholders can participate on the basis of a "contrat de milieu" or "contrat de rivière". Stakeholders are primarily local organizations and municipalities and the focus is on implementation of the sub-catchment plans. So it is more formal and also mainly directed at the stream and its riparian lands.

A distinction needs to be made between the Contrat de rivière, which is mainly a form of cooperation between municipalities and a water authority and that is focusing on the river itself and the "contrat de milieu" which is its more recent form that is aligned with the WFD and the Schémas Directeurs d'Aménagement et de Gestion des Eaux (SDAGE); the river basin management plans.

The "contract de milieu" is on a voluntary basis for a period of 5 years, and mainly seeks to implement local measures that fit within the SDAGE. The main focus is the implementation of the WFD (on the stream itself) and less on regional sustainable development as found in Italy. It is also formalized and formally handled by the river basins authorities with different procedures.

The approach in **Italy** is different. Italy does not have a long tradition in stakeholders' involvement but has at present potentially the most ambitious form. As indicated, it focusses on sustainable regional development, in which a healthy river plays an important part. In the Alto Valle de Tevere, there is active joint fact finding and formulation of objectives and the formulation of a regional plan, with a lot of smaller projects that can be carried out by volunteers. It is a recent initiative, which started only in 2015 and has so far already established 93 existing contracts with many more in preparation. It is actively supported on the national level by additional research into the effectiveness of measures, interactive groups on lessons learned and more. There are two forms, the "contratto di fiume" (CdF) and the "contratto di torrente". The latter one is more local, focussing on potential flood risk related to torrential streams.

At the moment the form of "contratto di fiume" is mainly limited to the northern part of Italy and involves mainly perennial rivers. However also in Tuscany in the Alto Valle di Tevere, there is a very active platform. In south Italy so far no CdF have been established.

The **involvement of stakeholders in CdF goes beyond the mere improvement of the stream itself.** There are also **sustainable development objectives**, such as sustainable tourism and agriculture or even sustainable electricity production. So the CdF also **considers the wider catchment area of a river.** An



important reason for this is the aim to integrate various planning forms at the local level, incorporating not only those that are related to the WFD but also other EU-directives, such as the Flood Directive and Soil directive and EU Bird and Habitat directive that are directed at other environmental objectives. It is also felt that more responsibility should be put at the lower level, and local stakeholders' involvement is expected to increase the level of details and assessments. It is also hoped that local involvement will lead to conflict resolution. By integrating various plans and objectives, a higher degree of cost-efficiency is expected.

The **CdF is facilitated in different ways**. There is a legal basis for the contracts and also available finance. On the national level there is a web-based platform for policy development, assessments and platforms for sharing lessons and on the effectiveness of the measures.

So far the CdF is comparatively new in Italy. It is well-organized and supported. It is also legally and contractually formalized and is characterized by a high level of integration and public participation. So far the engagement is strongly increasing, which indicates to a successful initiation.

In **Spain** different forms exist. A distinction needs to be made between the Custodia fluvial, that is part of the Custodia del Territorio and the Adopcion del Rio. The latter is directed at volunteer groups and are initiated by local or national NGOs, while the Custodia fluvial is directed at riparian land owners and at measures that serve the implementation of the WFD.

The overarching principle is the **Custodia del Territorio**, that **focusses on sustainable land use**, and the cultural protection that is covered by the Custodia Fluvial and the Custodia Agraria, which is directed at riparian lands. Spain also advocated a more integrated catchment-based approach, which combines the Custodia del Territorio with that of the Water Framework Directive

These forms of contracts are mainly directed at land owners, usually farms and the primary driver is the WFD. Land owners can engage themselves in conservation measures, or use third parties for that. **Measures may include clean-up activities, restoration of native vegetation but also the restoration of historic footpaths and irrigation canals of historic importance.**

They can also sell their farm if they do not want to coordinate the required management themselves. Contracts usually involve local municipalities, NGOs and riparian land owners, with a special third party organization that coordinates between land owners and the water authority and formulates management plans and contracts. The **finance may come from different sources** such as relevant ministries as well as EU-funds that are often available for sustainable land use changes.

Different parts of Spain, Galicia, Catalonia, have so far developed manuals for the involvement of stakeholders in stream management and restoration.

The **Adopcion di un Rio is an initiative of a national NGO, a sport-fishing federation (AFMS)**. This organization has so far handled over 99 different **contracts directed at stream restoration**. Most of them are for a limited time period of several years. It appears there are no examples of long term involvement. Activities had their peak in the early 90ies and at present there are occasional projects. **The more recent ones are aligned with national plans for river restoration**. The projects usually involve a combination of sport-fishers, NGO's and third parties and are financed with a contribution of the Voluntary program of MARM, which is a national program for the stimulation of voluntary work.

Also **outside of Europe** "adopting a stream" is becoming more important. There are various activities in South and Middle America that also focus on regional development. In the USA, there are different forms,



initiated by NGOs, but also on the state level, or by municipalities, covering also urban streams and control of sewer outfalls.

So far not touched upon is the **type of voluntary activities**. Stakeholders' involvement has very different forms, which is sometimes limited to annual clean-up. Sometimes it includes full-scale restoration of larger sections or even long-term monitoring activities. Often activities are directed at the stream channel and riparian vegetation, but there are also examples that involve riparian land owners and the construction of buffer zones, public footpaths and more.

The most common types of voluntary activities are:

- **Information and education:** Some voluntary programs but also groups are very much into raising awareness. There are handbooks how to start an "Adopt a Stream" group, or how to get public attention and support etc. There are active websites and events, which can be hosted by volunteers (see for example: <https://www.streamkeeper.org/>). This is often the first step to getting people involved and also the most critical.
- **Clean-up activities:** this is the most common and visual rewarding public activity. There are several examples how this can be done and organised by local citizens or even private firms, see e.g. for how to organize such an event <http://www.goadoptastream.com/webres/file/Stream%20Cleanup%20Guide%20with%20All%20Forms.pdf> and <http://www.charlottesville.org/departments-and-services/departments-h-z/public-works/environmental-sustainability/stream-clean-up-adopt-a-stream> as well as <http://selee.com/going-green-events/2017/6/1/adopt-a-stream-clean-up>. Often also schools are involved, since it is easily done by children also in the form of a game or contest. There are several examples that are also of interest in terms of coordination etc.
- **Management of riparian vegetation and invasive species:** the management of shoreline vegetation, such as the weeding of invasive plants and animals is also often done by public interest groups. It may also involve the active planting of native and endangered species.
- **Monitoring and understanding:** the public is engaged in different forms of monitoring, such as bio-monitoring (fish, macroinvertebrates, plants and vegetation structures) and chemical monitoring (notably on site monitoring of pH, oxygen etc., but less so in sampling that needs lab handling) and also in morphological inventories. This is for many private individuals the most rewarding activity, but it needs training, organization, equipment and also data analysis and storage. It can be complementary to formal monitoring networks and can provide a water authority with useful data in a very cost-efficient way. There can also be a fruitful cooperation with universities especially regarding biomonitoring. Ideally public monitoring is a match between the needs for additional information and public interest. Some citizen groups go as far as supporting also law enforcement based on their observations, which then triggers the authority to undertake legal action. Regarding monitoring, it is important that data are accessible to the public and that there are frequent sessions for joint interpretation, so there is a sense that data collection is useful and steers management decisions.
- **Training and education:** Training is also often provided by the public, with training of the trainers, mainly on the subject of monitoring, or general understanding of stream ecology, often also with regards to planning and constructing small scale restoration measures. Volunteers are often also



- involved in education, e.g. primary schools and public awareness campaigns. Training can be organized by NGO's, initiating and coordinating authorities that have the necessary expertise.
- **Data handling and public access to data.** Often data gathered by the public is made accessible to the public together with other monitoring data in databases that can be accessed by internet which facilitate uploading of georeferenced information. Sometimes the web site is managed by volunteers, but more often by a water authority.
 - **Urban areas.** In urban areas there are often specific programs coordinated by municipalities and directed at e.g. storm water drains, infiltration gardens etc., car washing, use of pesticides in gardens, cooperation with garden centres etc. There are volunteers that advise on the use of native plants and the design of rain water gardens.
 - **Planning and strategy:** The public may play a vital role in drafting and elaborating restoration plans and measures, for which they see also a vital role for themselves. Often these are local plans, with coordination with the wider catchment scale often ensured by a catchment authority. Often these plans follow formats needed to apply for the necessary funds in order to implement a measure, but some plans go much further. The question here is that of the formal status of citizens' plans, the need for formal frameworks etc. In some countries public participation in planning is regarded solely as a formally required activity, but in others there is a shift towards more public involvement, up to the level of co-creating and citizens' based management.
 - **Organising action, funding and political support.** Some groups actively engage in local politics as an advocate for stream restoration and management; sometimes with the active support of NGO's. Some handbooks have chapters on how to organize funding and political support. It should be noted that options for funding differ between countries and sometimes there are specific funding lines available for example for voluntary involvement, such as in Spain. See also http://manual.adoptastream.ca/sec13_1.html; <https://adoptastream.georgia.gov/manuals>; <http://riverlink.org/wp-content/uploads/2013/11/2013-AAS-Manual.pdf>; and <http://www.adoptastream.ca/planning-and-funding/project-funding>.

As the examples show there are differences in the way stakeholders are involved and how this is organized. Since the introduction of the WFD directive, participation of local stakeholders in planning has become the norm, although very often in a formal informative encounter. The influence of stakeholders on plans mainly depends on the way they are organized and the original role they have in water authorities. In water boards such as in the Netherlands, stakeholders are organized in different, sometimes political groups, and democratically represented in the board. Two groups stand out, the farmers which historically formed and financed the larger part of the activities of the water boards, and the citizen, who live in towns and villages. So involvement is on the grassroots level, but at the same time there the tasks and objectives are often set the national and provincial level, and in line with EU-directive, amongst which the WFD is paramount. The interpretation of the WFD regarding the need for restoration differs between countries but nevertheless frames what should be achieved. The involvement of stakeholders is much more focused on how formal objectives can be achieved. Several countries organize voluntary stakeholders' involvement within the framework of formal plans. So stakeholders' groups can propose restoration measures, which is subsequently agreed and consequently financed by a water authority.

There are however also forms of "Adopting a Stream" that are less formally organized which are often initiated by NGO's or local stakeholders' groups and not by a water authority with formal tasks in water



management. The focus of these groups differs. Still what is proposed by a local stakeholders' group needs to be in accordance with formal plans, if financial support is needed. There are only a limited number of stakeholders' groups that are completely self-supporting.

We see that in many countries stakeholders' involvement is organized at different levels. Often there is an initiative, in the form of a policy guideline at the national level, which is coordinated at the regional level by water or regional authorities, if this initiative comprises not only the stream proper but also the catchment and addresses also regional development goals. Overall there is a tendency to increase stakeholders' involvement as can be seen from Italy and France where the area covered by voluntary contracts and the number of contracts is increasing.

It is not possible to state what form of organization is the best. It depends on local context, institutional tasks and roles and also on political ambitions, especially regarding public participation in planning and implementation.

For further reading see also:

1. http://ec.europa.eu/environment/water/water-framework/index_en.html (for different guidance documents regarding the WFD.
2. Getting in Steps: Engaging Stakeholders in Your Watershed (In English) (<https://cfpub.epa.gov/npstbx/files/stakeholderguide.pdf>)
3. Handbuch für Bachpaten (In German) (http://www.aktion-blau-plus.rlp.de/servlet/is/8587/Handbuch%20Bachpaten_Monitor.pdf?command=downloadContent&filename=Handbuch%20Bachpaten_Monitor.pdf)
4. Manual Custodia Fluvial (in Spanish/Galician) (http://www.proxectorios.org/files/descargas/Manual_Custodia_Fluvial.pdf

5 ACTION PLAN

5.1 ACTION PLAN PROPOSED BY THE PARTICIPANTS

This section is based on the outcomes of the major discussions that took place in the course of the training workshop. It also summarises the status of stakeholders' involvement in stream restoration in Israel, including existing stakeholders' initiatives and challenges and constraints to stakeholders' involvement in river restoration in Israel.

5.2 STATUS OF STAKEHOLDERS' INVOLVEMENT IN STREAM RESTORATION IN ISRAEL"

5.2.1 EXISTING STAKEHOLDERS INITIATIVES

NANA, self-initiated, independent and without funding



There is much interest in the involvement of stakeholders and there are also in Israel already many examples of stakeholder involvement. NANA is a volunteer group that was initiated by the members themselves. It consists largely of people with considerable expertise and skills, including botanists, managers etc. This group operates completely independently from the authorities. They act as the eyes and ears of both the stream (what does it need) as well as the visitors to the stream. Some members of the group are always present on Saturday, recognizable by their T-shirts, and interact with visitors, receive compliments, complaints, suggestions. And they act as a fly to an elephant in the sense that they keep nagging authorities on things that should be arranged, frequently with success. There is an open invitation of NANA to the drainage and river authorities, to tell them how they operate, might they see opportunities for similar initiatives.

One of the remarks of members of the group is that they operate without any funding and that with limited funding, more activities could and would be undertaken. The group likes to stay independent and does not want to be institutionalized.

Communication with Citizens by drainage authorities

The drainage authorities that actively engage in stakeholder communication and participation have very positive examples of stakeholder involvement. In their experience there is often a strong local interest to participate and contribute, but the first step is to ensure that there is (emotional) bonding with the stream. As soon as this is established, involvement is often by own initiative.

This bonding is mainly achieved through education and awareness and through schools and school children. Through the children also their parents and the adult community are reached. These examples show that local citizens can be an important factor in stream management and restoration and also that it is possible to create bonding even in places where there was previously none. Major activities are cleaning up, planting and maintenance.

Some drainage authorities have experience with communicating with Arab and Bedouin communities; experience which is also valuable elsewhere.

River parks and municipal interests

The creation of river parks is another example of stakeholder involvement. These projects require land and considerable works, with high costs. Several river parks have been established in cooperation between drainage authorities and local authorities, notably municipalities. The major driving force is the common interest of municipality and drainage authority to restore river sections. Drainage authorities, like that of the Sharon drainage authority, see river park development as an important task, and not only drainage and flood protection.

Stakeholder involvement

The Tanneret stream was mentioned as an important positive example of stakeholder involvement. Within 5 years they achieved a lot. Stakeholder involvement started with a group of veterans, but they also work with schools, got the mayor and also the drainage authority involved. There are roundtable sessions to discuss major issues and actions.

Within the Kishon area: a perennial tributary that was restored section by section, that also comprises a trail footpath which connects Jewish and Arab communities. There is also communication with sheep herders about grazing, keeping off the vegetated islands, in the middle of the stream that are an important



breeding habitat. In addition, much effort is put in this catchment on the involvement of schools, the formation of community groups and on training them and involving them in stream restoration.

Involving private companies

Another example is the active involvement of a major firm, like an agro-business in citrus on the Yarkon River. The river authority was able to convince this company to release land for the establishment of a buffer zone, thus decreasing direct pollution to the river. It was understood that this company also used water from the river, so it was interested in having irrigation water of good quality. It should be noted that in many parts in Israel, farmers irrigate with treated effluent, so their direct dependence on a good quality of the river is less. However, since the treated effluent is often mixed with river water, taken out at opportune moments at higher river discharges, so the quality of the river still influences the quality of the water that is available to agriculture.

Another example of the involvement of a private company is a gas company that also provided the money for a bicycle path along the Alexander River. There may be more scope in involving private firms in the case they are actively approached. World-wide the interest of companies to engage in Business and Biodiversity is growing. Sometimes the major motives are image and public clout and trust, sometimes it is “giving back”, or to be able to have more control on the quality and supply of natural resources on which the company depends, such as irrigation water. An example is a major German food company that invests in monitoring the quality of produce, notably sun-flowers, in an area of arable lands that are situated within a national park in Hungary. In this way, the use of harmful agrochemicals is controlled and the living conditions for the Great Bustard; the heaviest flying bird in Europe, were improved, whilst the park authority does not have the costs and burden of the necessary monitoring and lab analysis. Interdependencies, between firms and natural resources, can be identified by using one of the many available assessment procedures that cover all activities of a company, including delivery and consumers.

Flood protection as a driver for stream restoration

Not explicitly brought up, was the potential use of flood protection works in order to do stream restoration. There are also examples from Israel, especially in a combination with widening the cross section of a stream. Especially the restoration of former wetland areas and flood plains contributes to the buffering capacity and peak attenuation of smaller streams, of which there are many examples from the UK and also from the Netherlands, in which streams were restored in this way. In many cases, money that would otherwise be spent on hard protection works only, like dikes, was invested in wider floodplains and wetlands that also serve many more functions. The opportunities will depend on the level of the land. The Alexander River is for example flowing in a river bed that flows far below the level of the surrounding land, so the possibility to restore former riverine wetlands as a flood buffer is limited.

Perennial and intermittent streams

It is easier to involve stakeholders in the case of perennial streams, since permanent waters are often more attractive and harbour fishes that can be used for sport fishing. The examples of stakeholder involvement in intermittent streams that could be found from southern Europe were very limited and were mainly found on torrential streams that posed a risk of flooding. However there are examples also of involvement in maintenance activities in the drier parts of Israel, such as trash collection etc. on intermittent streams, especially if these form the backyard to their houses.



A limited number of examples can be found of stakeholder involvement on perennial and also on intermittent streams in Israel, whether through self-initiated groups, or through voluntary involvement of stakeholders initiated by river and drainage authorities.

5.2.2 MAIN CHALLENGES/CONSTRAINTS TO STAKEHOLDERS' INVOLVEMENT IN RIVER RESTORATION IN ISRAEL

Stream restoration or ecological restoration as such is not yet very high on the political agenda in Israel. Hence the funds available for stream restoration are limited. As a consequence also the funds directly available for supporting or coordinating voluntary involvement are limited. Only the larger drainage authorities are actively engaged in it. There is **no national initiative or legal framework** similar to countries such as Italy, Spain and France, **although there is a Stream Keeper initiative at the Ministry of Environment, that mainly works through educational programmes, and so reaches out to citizens and initiates awareness and involvement.**

Due to lack of financial allocations, many stream restoration projects are negotiated with local municipalities and kibbutz, in a sort of "give and take". Since in most cases land is also needed to enable stream restoration, there is often an exchange of land for using the area for recreation and tourism. This has certainly made many restoration projects possible and represents a marked difference with the EU countries, which undertake river restoration because they also see it as a formal obligation that comes with the implementation of the EU Water Framework Directive, whereby, ecological restoration mostly focusses on restoring original conditions, not necessarily in the form of river parks. **In Israel in most river restoration works, there is a stronger relation with recreational use, and often restoration also takes the form of a river park.**

There is an ongoing program for the **ecological characterization of rivers and streams** according to the EU-Water Framework Directive system. At present this program has been set up for perennial streams, but still needs further elaboration for the intermittent streams, which have not yet been addressed even in the EU countries in terms of management or ecological characterization. A major problem is the **lack of data on water quality and ecological parameters**. One of the issues mentioned is the monitoring of incidents that have a major impact on ecology. Often **chemical monitoring is only done twice a year, so incidents are missed, as well as seasonality and other types of variation that could be useful and relevant to ecological characterization. Much more monitoring is needed and the use of volunteers in monitoring could be very helpful.** This would require **training and provision of simple measuring equipment** that is easily used by the public. It is generally felt that a **database with public access** would be an important incentive for people to participate

It is strongly felt that grassroots bottom-up involvement is there, but that there is no clear link to the decision makers especially at the national level. Seeing the large number of visitors that flock to sites like the turtle park on the Alexander River, but also to other streams and rivers that are attractive, there certainly is potential to **advocate the need for further investment along national budget lines, so these sites can be properly maintained, without allocating the entire burden to a local authority.** Also farmers see large number of visitors as a potential risk, so that needs to be managed well. Furthermore, since most visitors tend to visit on Sabbath, there is often a parking problem.



At present there is an ongoing evaluation of three restoration projects, in order to show that it was money well spent. This could be used to **advocate the case for stream restoration at the national level.**

A lot of stream restoration projects take place on individual river sections. It is generally felt that it would be good to **place stream restoration within a more integrated catchment approach that also addresses regional and local development opportunities, like those for tourism, as well as flood protection.**

Trash is a major issue in stream management. Trash is everywhere, and **cleaning up is a major management activity.** Currently, there is an “Equal Environment” initiative implemented by the Ministry of Environment, with a budget allocated to install waste removal facilities.

5.2.3 ACTIONS PROPOSED BY THE PARTICIPANTS

The following actions came up during the discussions:

A programmatic approach in the long term?

During the discussion, the focus was mainly on the short-term and less on the long-term. Seeing the potential for stakeholder involvement in general, **one may put a fully-fledged coordinated program, such as in Italy, France and Spain, as a long-term goal.** This programmatic approach should match local needs and possibilities, perhaps **with an emphasis on intermittent streams, combinations of stream restoration with local flood protection and recreation possibilities.** As indicated above, stream restoration in EU countries is strongly instigated by EU-directives, whilst in Israel most projects depend much more on local interest and consequently take often the form of river parks and recreational projects. **Since the interest and involvement of local land owners is needed, there may also be a general need to see what the potentials are of stream restoration for local economic development and how these can be identified by using a also a business case approach to restoration.**

Possible actions for the short-term

a. Forum as Platform for inter-vision: renew the activities of the Forum which has been active within the Stream-Keeper program of the ministry of Environment. This forum may also act as a learning platform to exchange lessons learned between different drainage and river authorities on stakeholder involvement. Different drainage authorities handle and interpret their tasks differently. **The larger ones, the Kishon and Gennesaret drainage authorities, do have people who are active in education and public communications. These people have valuable experience and examples on how to reach out to citizens and to involve them in the management of streams.**

The Forum/platform may focus on:

- Communication and awareness raising of specific groups, such as Arab and Bedouin communities;
- It may take up examples of stakeholders' involvement in intermittent streams, within Israel;
- It may look into the power of stakeholders' involvement in formulating integrated stream-based development and restoration plans and how a more integrated form of planning may advocate stream restoration as part of local and regional development.



- It may also discuss the need and form of a more programmatic long-term approach to stakeholder involvement in the different stages of stream restoration, planning, implementation, monitoring and management.

b. Pilot for Citizens' Science: It is acknowledged that citizens can contribute to monitoring. So the action for the short-term could be to **create a pilot for the involvement of citizens in the monitoring of a stream**. The pilot may be directed to:

Ecological characterization: Israel is working on an ecological characterization of rivers and streams and seriously lacks the data to duly characterize reference conditions and to determine the status of streams also in ecological terms. Most physical and chemical parameters are only measured twice a year and ecological data are largely lacking. **Riparian citizens may be trained in monitoring specific streams in order to create a more complete database for characterization**. There are four possible focal points for monitoring by the citizens:

- **Completing ecological data needed** to characterize and set objectives for different types of streams.
- **Completing chemical data**, which will help identify important (diffuse) pollution sources, including the influx of fine sediments.
- **Monitoring incidents:** also because of the lack of data there is no good overview of ecological relevant incidents that can take place.
- **Monitoring stream flow in intermittent rivers**, as well as the **presence of ponds** and other critical hydrological characteristics. Continuous monitoring stations are best for monitoring flow, but the formation and wetting and drying circles of intermittent rivers can best be monitored by citizens.

Sewer performance in urban areas: also brought up in the discussion was the **involvement of citizens in monitoring** the functioning of the urban drainage system, during major rainfall events. This is also a form of incident monitoring but in urban areas. Especially monitoring sewers that overflow and with blown pit covers during major rainfall events may give valuable information.

c. Workshop with decision makers/mayors. Municipalities and therefore mayors are an important stakeholder in stream restoration projects. A possible way to inform local decision makers about the potentials of stream restoration would be to invite decision makers from other municipalities that have positive examples of stream restoration and stakeholders' involvement. The **emphasis in the discussion could be why and how to initiate stream restoration** for the benefit of local communities and the local economy. There are some examples from Israel, which could be complemented with mayors from cities in southern Europe.

d. Capture mechanism for recreational hotspots: As noted, restored stream may attract many visitors from a wider area, which creates additional management and maintenance needs, as well as such a need for parking spaces. Perhaps one could look at several examples/cases in order to see whether some money could be raised locally (e.g. through entrance fees, parking fees) or should come from national source.

e. Advocating the benefits of stream restoration. As indicated, stream restoration is not high on the list of decision makers, neither at the local level, nor at the national level. This has the inevitable consequence



that not much money is available for stream restoration, and that many restoration projects depend on local funds that can often only be generated if restoration is combined with tourism development. As a consequence, there are also limited funds available to start major programmes that also involve volunteers. Therefore, it would be good to do a **full comprehensive societal costs-benefit analysis for some stream restoration projects**, so that the benefits to the local community become clear. This may be **based on the ongoing evaluation of some stream restoration projects, and can be complemented by restoration projects from other countries**. A societal cost-benefit analysis would try to value all ecosystem services that are delivered by a restored stream, such as the attenuation of peak floods, recharge of groundwater that is used in agriculture, self-purification processes that increase the water quality and therefore its potential use, its use for recreation and its possible influence on real estate prices and more.

f. Model for Adopting a stream. In the course of the workshop various models were discussed. The examples from Spain, Italy and France are very diverse and strongly vested in the obligations that come with the implementation of the WFD. Because of the WFD, most examples are nationally coordinated and also funded with varying degrees of stakeholder involvement and various roles for public authorities. **In most European countries the more integral approaches strongly rely on the coordinating role of the regional planning level.** This regional level, **is largely absent in Israel and planning is more centralized** at the national level and also largely dependent upon the local level of Kitbutzes and Mojaves. This would mean that the **potential regional coordinating body for river and stream restoration is the Drainage and River authorities**, and that **more integrated stream restoration plans depend especially upon the cooperation but also the mandate of these authorities**.

Similarly these **drainage and river authorities should also play an important role in setting up and stimulating community involvement, and there are several examples that they already do**. There is **no fixed model, since the authorities can decide for themselves what is most appropriate**. For some **smaller drainage authorities**, there are budgetary constraints that make it difficult for them to engage in stakeholder interaction. In this, the national level, **ministry could be helpful in creating a format, legal basis and also basic funding line for the involvement of stakeholders**.

How this is best organized requires due consideration, and as part of the training workshop there was not enough time to discuss all possibilities for an organisational model, including its legal and financial implications. Discussing such a model and also agreeing upon it will require time and also the involvement of mandated representatives. Most actions mentioned are therefore largely standalone potential initiatives and useful projects and not a coordinated **national effort, initiated on the ministerial level, coordinated by the water authorities and executed by local level authorities or voluntary groups**. So there is not one model that fits all, but the basic question is whether this would be needed.

Some of the drainage and river authorities that already engage in stakeholder involvement indicate that there might be scope to engage stakeholders in more activities, such as monitoring. There was also a general sense that the **preferred form** would be to **engage stakeholders also in the planning phase, of restoration projects, and to give them also access to monitoring data**. These are issues that may need the development of appropriate policies and perhaps also centralized support. **So, although it is possible to carry on with stakeholder involvement on a project by project basis, there are clear indications that much more could be achieved by coordinating this effort and to support also the water authorities in engaging stakeholder groups**



The ministry has already set the first steps to characterise the waters of Israel according to the WFD, with more focus also on ecological parameters and matching restoration efforts. **Implementing this will require** much more data than is presently available and also much more monitoring efforts. This would be a good moment to see how part of this monitoring could be provided for by stakeholder groups and also how these groups might be involved in small scale ecological restoration projects.

6 PROPOSED ACTION PLAN

Below is the list of actions that are proposed by the consultant for the initiation of an “Adoption of a stream” programme. The actions were developed against the background of existing river restoration initiatives in Israel and the main challenges that the country faces in involving stakeholders in such initiatives, which surfaced during the workshop discussions

6.1 A POSSIBLE MODEL

The drainage authorities are very autonomous in the way they handle their tasks. If they see the need to engage in stakeholder participation, they will. Some of the smaller drainage authorities may have budgetary constraints to engage with stakeholder groups. It would perhaps be possible to **define an ear marked fund dedicated to initiating stakeholder involvement as a project**. If it works, it may probably be self-sufficient, in the sense that volunteer action may set free budget that allow the drainage authority to initiate, organize and coordinate voluntary action. **So a possible model should** combine the **facilitation** of the regional authorities to engage in stakeholder involvement and to **coordinate** what from the viewpoint of river restoration can be considered as generic tasks.

In general two lines for involvement may be distinguished:

- Engaging stakeholders in monitoring
- Engaging stakeholders in river restoration.

Engaging stakeholders in monitoring

The need for monitoring gathers more importance in case Israel moves towards a WFD-based form of water management but also for fine tuning policies and measures for general water quality management. This would require gathering much more monitoring data, both biological but also chemical, than is gathered at the moment. By initiating a voluntary based monitoring program, the costs of additional monitoring could be reduced, and at the same time momentum for voluntary involvement would increase.

Setting up dedicated restoration projects with riparian citizens needs a very location-specific approach. **Monitoring however** has many generic elements and initiating voluntary involvement in monitoring could therefore be an activity that is best coordinated and stimulated at the national level and subsequently put into practice by the drainage and river authorities.

The **analysis of data and assessment of water management needs** is however seen by most representatives as an activity that should be carried out by the drainage authorities themselves.



This would require:

- An **assessment of the future monitoring needs** and also **which part can be supported by involving volunteers**. These future monitoring needs will have to be translated into regional monitoring plans by the regional water authorities, so they decide what parameters will be monitored, where, how often and in what way. They will subsequently also **determine the potential scope for voluntary involvement** of stakeholders in their management area.
- Developing **guidance for monitoring specific parameters by volunteers** as well as a related “**train the trainers**” program that is directed at the personnel of the drainage and river authorities (by the national level). These will then be able to **train volunteers within their area**.
- Develop an **interactive database**, in which monitoring data can be easily stored for example by an app by volunteers and that is also accessible by volunteers as well as the experts of water boards.
- The selection or **development of an appropriate app** and other **monitoring equipment** that can be used by volunteers.
- Based on these it would be best to start in one or two pilot basins, in order to see if guidance and training fulfils its purpose and how volunteers can be mobilised.
- After the **evaluation of the pilot guidance and also the selection of monitoring tasks** that can be carried out by volunteers are revised, **up-scaling** to cover more river basins can follow
- At the national level a **specific fund is set up that promotes stakeholder involvement in monitoring**, also as a means to reduce costs of necessary monitoring activities. Perhaps this could also have the form of a revolving fund or be part of a budget set aside for the regional authorities for fulfilling additional monitoring needs. The probable cost reduction may be one of the evaluation criteria to be looked into when evaluating the pilots.

Short term 1 to 2 years	Medium term 2 to 4 years	Long term 3 and more years
Monitoring (stakeholder involvement in monitoring)		
Platform discussions on stakeholder involvement	Define an appropriate model for stakeholder involvement in	
Determine monitoring needs and potential role of stakeholders in monitoring	Set up a national program for stakeholder involvement in monitoring	
Formulate first guidance for involvement of stakeholders prior to pilot studies	Evaluate the pilots	
Set up a first pilot in urban areas for sewer performance, since it is urgent	Complete the guidance	
Set up a second pilot for ecological monitoring, since it is an important future task	Define appropriate tools for monitoring by citizens	
	Set up a national database	Operate an interactive and open database
	Pilot to define monitoring needs and network in regional basins	Upscale nation wide.
Restoration (stakeholder involvement in restoration and management)		
Determine potential role of stakeholders in restoration	Define a funding line to support stakeholder initiatives.	
Determine ecological restoration needs		
Set up two additional pilots for ecological restoration involving stakeholders	Evaluate the pilots and set up a general guidance	Upscale nation wide.
	Initiative at the national level	
	Joint national regional initiative	
	Initiative at the regional level	



6.2 ENGAGING STAKEHOLDERS IN RESTORATION

Restoration is a site specific activity, sometimes already undertaken with stakeholders. Regarding this aspect the first step would be to use the platform for intervision between different regional authorities and to explore with this platform also possible ways of engaging stakeholders and the different tasks and roles of both national and regional authorities.

Based on these discussions a first general guideline may be produced that focusses on stakeholder involvement in restoration and that is used to set up 1 or 2 specific pilot projects.



7 ANNEXES

7.1 AGENDA

The workshop took two days. The first focused on stream values and functions and examples of stakeholder involvement. The second day was more interactive, engaging stakeholder in discussions regarding the need and potential for stakeholder involvement.

Day 1 (Tuesday, 16 January 2018)

Time	Description
09:00 - 09:15	Welcome and opening remarks – Deputy Director General, Ministry of Environmental Protection
09:15- 09:30	Welcome & Objectives of the Course Introduction to Day 1
09:30 - 10:15	<u>Stream functioning:</u> Ecological functioning and values
10.15 - 11:00	<u>Use and impacts:</u> Ecosystem services and values Human interventions and impacts
11:00 - 11:30	Coffee Break
11.30 - 12:30	Stream restoration and the NPA's rational - Avi Uzan
12:30 - 13:30	Lunch
13:30 - 14:45	<u>Examples of adopting a stream:</u> -Examples from Italy, Spain, France -Examples from other countries Q&A 15 min (Plenary).
14:45 - 16:00	How to involve stakeholders and the public <u>Type</u> of activities - How to involve them and keep them involved Q&A 15 min (Plenary).

Day 2 (Wednesday, 17 January 2018)

Time	Description
09:00- 10:00	Field visit – Hefer Lake (10 min from the workshop venue)
10:00-10:15	Coffee Break
10:15 - 10:30	Introduction to Day 2, the desired and expected outcome



10:30-11:30	<u>Stream restoration and stakeholders:</u> - Introduction to the Poleg, Alexander and Hadera streams (Dror Epstein) - Plenary Discussion, Q&A, identification of the kind of issues faced by stream restoration looking at the maps of the Poleg, Alexander and Hadera streams - Stakeholder involvement on the Alexander river (Yohanan Oron)
11:30-12:30	Objectives of stakeholder involvement. Potential stakeholder involvement using the examples of Poleg, Alexander and Hadera.
12:30-13:30	Lunch
13:30-14:30	<u>Organisational models:</u> - Possible organisational models for stakeholder involvement - Plenary discussion on possible models for adopting a stream in Israel
14:30-15:30	<u>Preferred organisational set-up</u> Preferred organisational set-up and division of tasks and roles, how to finance such a program
15:30-16:30	<u>Action plan</u> Action plan for initiating Adopting a stream in different basins defining the next steps (in the short, medium and long term) (plenary).
16:30-17:00	Closing/Wrap up